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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/190,208	11/13/1998	JIASHU CHEN	CHEN3-1	6397

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EXAMINER	
LAO, LUN S	

ART UNIT	PAPER NUMBER
2643	18

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/190,208	CHEN ET AL.	
	Examiner	Art Unit	
	Lun-See Lao	2643	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Introduction

1. Claims 1-14 remain pending. This action is in response to the amendment filed on 10-24-2003. Claims 1, 5, 7 and 11 have been amended.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-4 and 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers (US PAT. 4,817,149) in view of Matsumoto (US PAT. 5,381,482).

Consider claim 1, Myers teaches a digital delay line for use in a 3D audio sound system, comprising:

a first delay module (time delays TD 118, shown in fig.20) providing a choice of delay within a first resolution for use in said 3D audio sound system (see col.13 lines 35-68);

a second delay module (VAR TD 104) in series with said first module (fig. 1, 104 and 116 which is comprised of 118s), said second delay module providing a choice of a plurality of additional fractional delays (VAR TD shown in fig.1 as 104 and shown in

more detail in fig.20 having 120, 122, ..., 134, wherein the values of VAR TD range from 0.0 to 0.67ms) (col.13 lines 35-68),

wherein said first resolution is added (via mixer 168) to said additional fractional delays (TD + 0.67ms (VAR TD)) for use in said 3D audio sound system to create a perceived positional sound (see col.6 lines 23-55; col.13 lines 35-68).

Myers does not teach that the first delay takes an integer value, nor does Myers explicitly teach that the first and the second time delays operate in digital fashion.

Matsumoto teaches adding two delays (fig. 4), one being an integer delay (DLY 40 with 20 ms), and the other being a fractional delay (DLY 32, 33, having value of 0.7ms). In Matsumoto a second delay module (32, 33) produces an additional delay (0.7ms) which is a fraction of / less than a first delay (20ms) produced by a first delay module (DLY 40) in series. See col. 9, line 15 – col. 10, line 55. Further in Matsumoto, delays are digital delays in that they are placed between A/D converter 21 and D/A converters 23, 24.

Therefore, it would have been obvious to use an integer value for the first delay and to operate the first and the second time delays in digital fashion in Myers. One of ordinary skill in the art would have been motivated to combine the teachings of Myers and Matsumoto because this would have made the reproduced sound appear more naturally (Matsumoto, col. 1, lines 45-52).

Consider claims 2-4 and 6, Myers teaches the digital delay line for use in a 3D audio sound system of first delay module comprises: a first-in, first out buffer (see fig.20 (TD)); and the digital delay line for use in a 3D audio sound system of second delay

module comprises: a choice of any one of a plurality of polyphase filters (see fig.20, (TD and VAR TD)), each of said polyphase filters providing an additional fraction inherently (by positional control computer set up) delay less than said first resolution (see col.13 lines 35-68); and the digital delay line for use in a 3D audio sound system of further comprising: a localization control module comprising an interaural time delay look-up table associating desired sound source locations with a particular interaural time delay (see fig.15 and col.9 lines 49-63) and the digital delay line for use in a 3D audio sound system the first resolution is based on a sampling rate of a digital audio signal (see fig.20 (118, TD) and col.13 lines 35-68).

Consider claim 11, Myers teaches an apparatus for providing an interaural time delay in a digital 3D sound system, comprising:

means for selecting one of a plurality of available first time delays (TDs 118, shown in fig.20) having a first resolution between each of said plurality of available first time delays (see col.13 lines 35-68), said first resolution providing a rough estimate of a desired interaural time delay (col. 10, lines 28-44);

means for additionally selecting one of a plurality of available second time delays (VAR TD shown in fig.1 as 104 and shown in fig.20 as 120, 122, ..., 134, wherein the values of VAR TDs range from 0.0 to 0.67ms), each of said plurality of available second time delays being a fraction delay providing a highly refined additional interaural time delay (VAR TD ranges from 0.0 to 0.67ms) (col.13 lines 35-68; col. 10, lines 28-44); and

means for adding (mixer 168, fig.1) said selected first digital time delay and said second digital time delay (TD + 0.67ms (VAR TD)) to provide a desired interaural time

delay for use in said digital 3D sound system to create a perceived positional sound (see col.6 lines 23-55).

Myers does not teach that the first delay is an integer value, nor does Myers explicitly teach that the first and the second time delays operate in digital fashion.

Matsumoto teaches adding two delays (fig. 4; col. 9, line 15 – col. 10, line 55), one being an integer delay (DLY 40 set at 20ms), and the other being a fractional delay (DLY 32, 33, having value of 0.7ms). In Matsumoto, delays are digital delays (operate between A/D converter 21 and D/A converters 23, 24). Matsumoto teaches the integer delay providing a rough estimate of a desired interaural time delay in that the integer delay values are determined to be 20 ms based on estimated interaural time delays (col. 3, line 64 – col. 4, line 43; col. 9, line 65 – col. 10, line 10).

Therefore, it would have been obvious to use an integer value for the first delay and to operate the first and the second time delays in digital fashion in Myers. One of ordinary skill in the art would have been motivated to combine the teachings of Myers and Matsumoto because this would have made the reproduced sound appear more naturally (Matsumoto, col. 1, lines 45-52).

Consider claims 12-14, Myers teaches the apparatus for providing an interaural time delay in a digital 3D sound system of desired interaural time delay relates (see fig.1 116 which is fig.20) to a desired interaural time delay (see fig.1, 104 which is fig.15)) for one ear of a listener (see fig.1, (190L or 192R)); and said first time delay (see fig.1, 116 which is fig.20 (TD+ 0.67millisecond (VAR TD)) relates to a desired interaural time delay (see fig.1, 104 which is fig. 15) for a second ear of said listener (see fig.1, (190L or

192R) and col.13lines 35-68); and the plurality of available time delays are based on a sampling rate of a digital audio signal (see fig.20,(120, 122, 124, 126, 128, 130, 134)(VAE TD)); and the apparatus for providing an interaural time delay in a digital 3D sound system comprises:

means for fixing (0.67 millisecond delay independently) a first interaural time delay (fig.1, 116 which is fig.20, and col.13 lines 35-68) with respect to a first ear of a listener (see fig.1 (190R or 192L)); and

means for providing said -desired interaural time delay (see fig.1, 104 which is fig. 15) with respect to a second ear (see fig.1 (190R or 192L)) of said listener (see col.9 lines 50-63).

Consider claims 7-10, these are method claims of claims 11-14, respectively. Thus note claims 11-14, respectively, for rejections.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Myers in view of Matsumoto as applied to claims 1-4 above, and further in view of Nagata (US PAT. 5,974,154).

Consider claim 5, Matsumoto and Myers do not teach clearly the digital delay line for use in a 3D audio sound system of the localization control module further comprises: an integer and fractional delay selector adapted to determine a first digital time delay for use by said first delay module and said additional fractional delay for use by said second digital delay module.

However, Nagata teaches an integer (see fig.2, 61) and fractional (see fig.2, 71) delay selector adapted to determine a first digital time delay for use by said first delay module and said additional fractional delay for use by said second digital delay module (see col.4 line 60-col.5 line67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Nagata into the teaching Myers as modified to provide an effector exhibiting improved operability for many and unspecified users when applied to a karaoke amplifier or the like.

Response to arguments

5. Applicant's arguments filed 10-24-2003 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claims 1-4 and 6, applicant argued that Myers does not teach that the first and the second delay modules are digital delay modules and in Matsumoto the integer and the fractional delays are in separate paths / note added (remarks, pages 8-9).

The examiner respectfully disagrees. Myers is not relied on to teach that the first and the second delay modules are digital delay modules, which is met by Matsumoto. Similarly, Matsumoto is not relied on to teach adding the integer and the fractional delays, which is met by Myers. It is the combination of Myers and Matsumoto, rather than Myers or Matsumoto individually, that meet the claimed first and the second delay modules being digital delay modules and adding the integer and the fractional delays.

Regarding claim 5, applicant argued that Nagata fails to teach adding an integer delay and a fractional delay for use in a 3D audio sound system. (remarks, page 10-11). The examiner's response is that Nagata is not relied on to teach adding an integer delay and a fractional delay for use in a 3D audio sound system, which is met by Myers (abstract, lines 1-4).

Regarding claims 7-14, applicant argued that Myers does not teach the time delays are digital time delays, nor one time delay being an integer time delay (remarks, pages 6-8). The examiner's response is that time delays being digital time delays are met by Matsumoto in that the integer time delays 41, 32-1, 33-1 and 42 and fractional delays 32 and 33 operate between A/D converter 21 and D/A converters 22-1, 32-1, ...25. The first time delay being an integer time delay is met by Matsumoto in that delays DLY 41, 42, 32-1, 33-1 have values of 43ms or 30 ms. Myers teaches the fraction delay providing a highly refined additional interaural time delay in that the variable in that the values of VAR TD takes a range of values from 0.0 to 0.67ms. Matsumoto teaches the integer delay providing a rough estimate of a desired interaural time delay in that the integer delay values are determined to be 20 ms based on estimated interaural time delays (col. 3, line 64 – col. 4, line 43; col. 9, line 65 – col. 10, line 10).

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:(703) 872-9306

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (703) 305-2259 The examiner can normally be reached on Monday-Friday from 8:00 to 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz, can be reached on (703) 305-4708.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the Technology Center 2600 whose telephone number is (703) 306-0377.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Crystal Park 2
(703305-2259

DUC NGUYEN
PRIMARY EXAMINER